

c.) Amendments to the Claims.

Please amend claims 1, 3, 9, 11 and 12, and add new claims 31-40 as follows, without prejudice or disclaimer to the subject matter thereof.

1. (currently amended) An imaging apparatus comprising:

means an integrator for integration of spatial, spectral and temporal features, and optionally other features that create a diagnostic module comprising physiologic data or calibration data, in a spectral and temporal ~~multi-modal~~ multimodal imaging system for the evaluation of biological systems and stimuli; and

means a fuser for fusing a thermal image or other imaging modalities and hyperspectral data cube for assessment of biological processes.

2. (original) The imaging apparatus of claim 1 wherein the integrated features are two or more of visible or infrared hyperspectral images, visible or infrared brightfield images, thermal images, fluorescence images, Raman images, or combinations thereof.

3. (currently amended) The imaging apparatus of claim 1 further comprising: a specific UV, visible or infrared light source, and means a collector for collecting two or more of visible or infrared hyperspectral images, visible or infrared brightfield images, thermal images, fluorescence images, Raman images, or combinations thereof.

4. (original) The imaging apparatus of claim 1 wherein the light source can be controlled to limit the illumination to only a single or group of spectral bands.

5. (original) The imaging apparatus of claim 1 wherein the multimodal imaging systems includes a collection optic that is an endoscope.

6. (original) The imaging apparatus of claim 1 further comprising inputs for signals from instruments monitoring a biological function to allow the synchronization of the collection of images to the biological process.

7. (original) The imaging apparatus of claim 1 further comprising: on-board CCD chip filter

and processing electronics to perform data operations prior to transmission of signal to increase processing speed; and inputs for a physiological monitoring system.

8. (original) The imaging apparatus of claim 1 further comprising: sensors for image fusion and alignment; alignment mechanisms for aligning multiple optical paths; normal color video for displaying data and for camera alignment and aiming; and a storage system for recording and logging of real-time or near real-time output.

9. (currently amended) The imaging apparatus of claim 1 further comprising ~~means a~~ stabilizer for stabilizing and integrating imagery and data sets in a temporally and geometrically dynamic environment in such a way that the integrated data sets can be interpreted.

10. (original) The imaging apparatus of claim 1 further comprising an image registration device to maintain image centering.

11. (currently amended) The imaging apparatus of claim 1 further comprising a reference frame device that is visible in the images across multiple spectra as well as in ~~thermal-thermal~~ thermal images for ~~multi-modal-multimodal~~ fusion.

12. (currently amended) The imaging apparatus of claim 1 further comprising: a tracked imaging apparatus comprising a ~~means of-unifier for~~ unifier for creating a unified spatial mosaic of individual hyperspectral image cubes taken at various locations and times.

13-30. (canceled).

31. (new) An imaging apparatus comprising:

an integrator for integration of spatial, spectral and temporal features, wherein the spatial, spectral and temporal features are two or more of visible or infrared hyperspectral images, visible or infrared brightfield images, thermal images, fluorescence images, Raman images, or combinations thereof, and optionally other features that create a diagnostic module

comprising physiologic data or calibration data, in a spectral and temporal multimodal imaging system for the evaluation of biological systems and stimuli;

a fuser for fusing a thermal image or other imaging modalities and hyperspectral data cube for assessment of biological processes; and

a tracked imaging apparatus comprising a unifier of creating a unified spatial mosaic of individual hyperspectral image cubes taken at various locations and times.

32. (new) The imaging apparatus of claim 31 further comprising: a specific UV, visible or infrared light source, and a collector for collecting two or more of visible or infrared hyperspectral images, visible or infrared brightfield images, thermal images, fluorescence images, Raman images, or combinations thereof.

33. (new) The imaging apparatus of claim 31 wherein the light source can be controlled to limit the illumination to only a single or group of spectral bands.

34. (new) The imaging apparatus of claim 31 wherein the multimodal imaging systems includes a collection optic that is an endoscope.

35. (new) The imaging apparatus of claim 31 further comprising inputs for signals from instruments monitoring a biological function to allow the synchronization of the collection of images to the biological process.

36. (new) The imaging apparatus of claim 31 further comprising: on-board CCD chip filter and processing electronics to perform data operations prior to transmission of signal to increase processing speed; and inputs for a physiological monitoring system.

37. (new) The imaging apparatus of claim 31 further comprising: sensors for image fusion and alignment; alignment mechanisms for aligning multiple optical paths; normal color video for displaying data and for camera alignment and aiming; and a storage system for recording and logging of real-time or near real-time output.

38. (new) The imaging apparatus of claim 31 further comprising a stabilizer for stabilizing

and integrating imagery and data sets in a temporally and geometrically dynamic environment in such a way that the integrated data sets can be interpreted.

39. (new) The imaging apparatus of claim 31 further comprising an image registration device to maintain image centering.

40. (new) The imaging apparatus of claim 31 further comprising a reference frame device that is visible in the images across multiple spectra as well as in thermal images for multimodal fusion.